299-E33-66 (A6874) Event B
Log Data Report

Borehole Information:

Borehole:		299-E33-66 (A6874)		Site:	216-B-8
Coordinates (WA St Plane)		GWL[1] (ft):	None	GWL Date:	11/06/07
North (m)	East (m)	Drill Date	TOC[2] Elevation	Total Depth (ft)	Type
Not available	Not available	11/47	Not available	144	Cable

Casing Information:

Casing Type	Stickup (ft)	Outer Diameter (in.)	Inside Diameter (in.)	Thickness (in.)	Top (ft)	Bottom (ft)
Welded steel	2.0	8 5/8	8	5/16	2.0	144

Borehole Notes:

A Log Data Report (LDR) for this borehole was previously issued by Mactec-ERS for log data acquired with the Spectral Gamma Logging System (SGLS) in March 2002. It was determined the borehole should be re-logged prior to planned decommissioning of the borehole. The current log data are compared to the data acquired in 2002 to determine if changes have occurred in contaminant profile or in concentration. In addition, minimum detection limits for U-238 and U-235 were derived because vadose zone sources of processed uranium existing in the groundwater in the Waste Management Area B-BX-BY are yet to be defined. No processed uranium was observed in the vadose zone at this borehole. Moisture log data, not acquired in 2002, were acquired during this log event. The current log data are reported in this LDR, which is designated as Log Event B.

The precise location of this borehole and the TOC elevation are not known with certainty and are not reported in this LDR. Based on e-tape measurements in 2002 and 2008, water exists in the bottom of this borehole at approximately 139.4 ft. Nearby groundwater wells show groundwater at approximately 230 ft suggesting this water at 139 ft is trapped inside the casing.

The logging engineer measured the casing diameter with a caliper and steel tape. All log data are referenced to the top of casing.

Logging Equipment Information:

Logging System:	Gamma 4E		Type: / Serial No.:	SGLS HpGe (70%) / 34TP40587A
Effective Calibration Date:	05/17/07	Calibration Reference:	HGLP-CC-015	
		Logging Procedure:	HGLP-MAN-002, Rev. 0	

Logging System:	Gamma 1C		Type: / Serial No.:	HRLS HpGe (planar) / 39A314
Effective Calibration Date:	11/22/06	Calibration Reference:	HGLP-CC-004	
		Logging Procedure:	HGLP-MAN-002, Rev. 0	

Logging System:	Gamma 4H		Type: / Serial No.:	NMLS / H310700352
Effective Calibration Date:	11/06/06	Calibration Reference:	HGLP-CC-022	
		Logging Procedure:	HGLP-MAN-002, Rev. 0	

SGLS Log Run Information:

Log Run	1	2	3	4	5
Date	11/06/07	11/06/07	11/06/07	11/07/07	11/07/07
Logging Engineer	Spatz	Spatz	Spatz	Spatz	Spatz
Start Depth (ft)	144.0	37.0	27.0	100.0	100.0
Finish Depth (ft)	36.0	26.0	13.0	82.0	2.0
Count Time (sec)	100	20	100	100	100
Live/Real	R	R	R	R	R
Shield (Y/N)	N	N	N	N	N
MSA Interval (ft)	1.0	1.0	1.0	1.0	1.0
Pre-Verification	DEH71CAB	DEH71CAB	DEH71CAB	DEH81CAB	DEH81CAB
Start File	DEH71000	DEH71109	DEH71121	DEH81000	DEH81019
Finish File	DEH71108	DEH71120	DEH71135	DEH81018	DEH81031
Post-Verification	DEH71CAA	DEH71CAA	DEH71CAA	DEH81CAA	DEH81CAA
Depth Return Error (in.)	N/A	N/A	0	N/A	0
Comments	No fine gain adjustment	No fine gain adjustment	No fine gain adjustment	No fine gain adjustment	No fine gain adjustment

Notes: **Dead Time greater than 40 percent for log run 2**
Data acquisition for 20 seconds

High Rate Logging System (HRLS) Log Run Information:

Log Run	8	9 Repeat		
Date	11/08/07	11/08/07		
Logging Engineer	Spatz	Spatz		
Start Depth (ft)	37.0	32.0		
Finish Depth (ft)	26.0	30.0		
Count Time (sec)	300	300		
Live/Real	R	R		
Shield (Y/N)	N	N		
MSA Interval (ft)	0.5	0.5		
Pre-Verification	AC181CAB	AC181CAB		
Start File	AC181000	AC181023		
Finish File	AC181022	AC181027		
Post-Verification	AC181CAA	AC181CAA		
Depth Return Error (in.)	N/A	- 0.5		
Comments	No fine gain adjustment	No fine gain adjustment		

Neutron Moisture Logging System (NMLS) Log Run Information:

Log Run	6	7 Repeat		
Date	01/07/07	01/08/07		
Logging Engineer	Spatz	Spatz		
Start Depth (ft)	139.0	100.0		
Finish Depth (ft)	2.0	82.0		
Count Time (sec)	15	15		
Live/Real	R	R		
Shield (Y/N)	N	N		
MSA Interval (ft)	0.25	0.25		
Pre-Verification	DH812CAB	DH822CAB		
Start File	DH812000	DH882000		
Finish File	DH812553	DH822072		
Post-Verification	DH812CAA	DH822CAA		
Depth Return Error (in.)	- 0.5	- 0.5		

Log Run	6	7 Repeat		
Comments	None	None		

Notes: **Maximum NMLS depth is 139 ft, approximately 0.5 ft above water**

Logging Operation Notes:

Logging was conducted with a centralizer on each sonde. All measurements are referenced to TOC.

Analysis Notes:

Analyst:	Henwood	**Date:**	06/06/08	**Reference:**	GJO-HGLP 1.6.3, Rev. 0

Pre- and post-run verifications for the logging system were performed before and after each day's data acquisition. The acceptance criteria were met.

A casing correction for a 5/16-in. thick casing was applied to the SGLS and HRLS data. NMLS data were corrected to percent volumetric moisture using calibration for an 8-in. ID casing.

SGLS spectra were processed in batch mode using APTEC SUPERVISOR to identify individual energy peaks and determine count rates. Concentrations were calculated with EXCEL worksheet templates identified as G4EMay07.xls and G1cNov06.xls for the SGLS and HRLS, respectively, using efficiency functions and corrections for casing, dead time, and water as determined from annual calibrations.

Results and Interpretations:

Cs-137 was detected throughout the borehole. The maximum concentration was measured at approximately 34,000 pCi/g at 31 ft. The Cs-137 profile and concentrations are consistent with the 2002 data (after decay) suggesting no significant changes have occurred.

There are no indications of processed uranium (U-238 and U-235) in the vadose zone at this borehole.

Moisture data exhibit some variation in moisture content.

Repeat sections acquired for the logging systems indicate good repeatability.

List of Log Plots:

Depth Reference is TOC

Manmade Radionuclides
Natural Gamma Logs
Combination Plot (2 pages)
Combination Plot (0 to 150 ft)
Total Gamma, Moisture, & Dead Time
Repeat of Manmade Radionuclides
Repeat Section of Natural Gamma Logs
Repeat of Moisture
SGLS 2002/2007 Comparison of Manmade Radionuclides

[1] GWL – groundwater level
[2] TOC – top of casing

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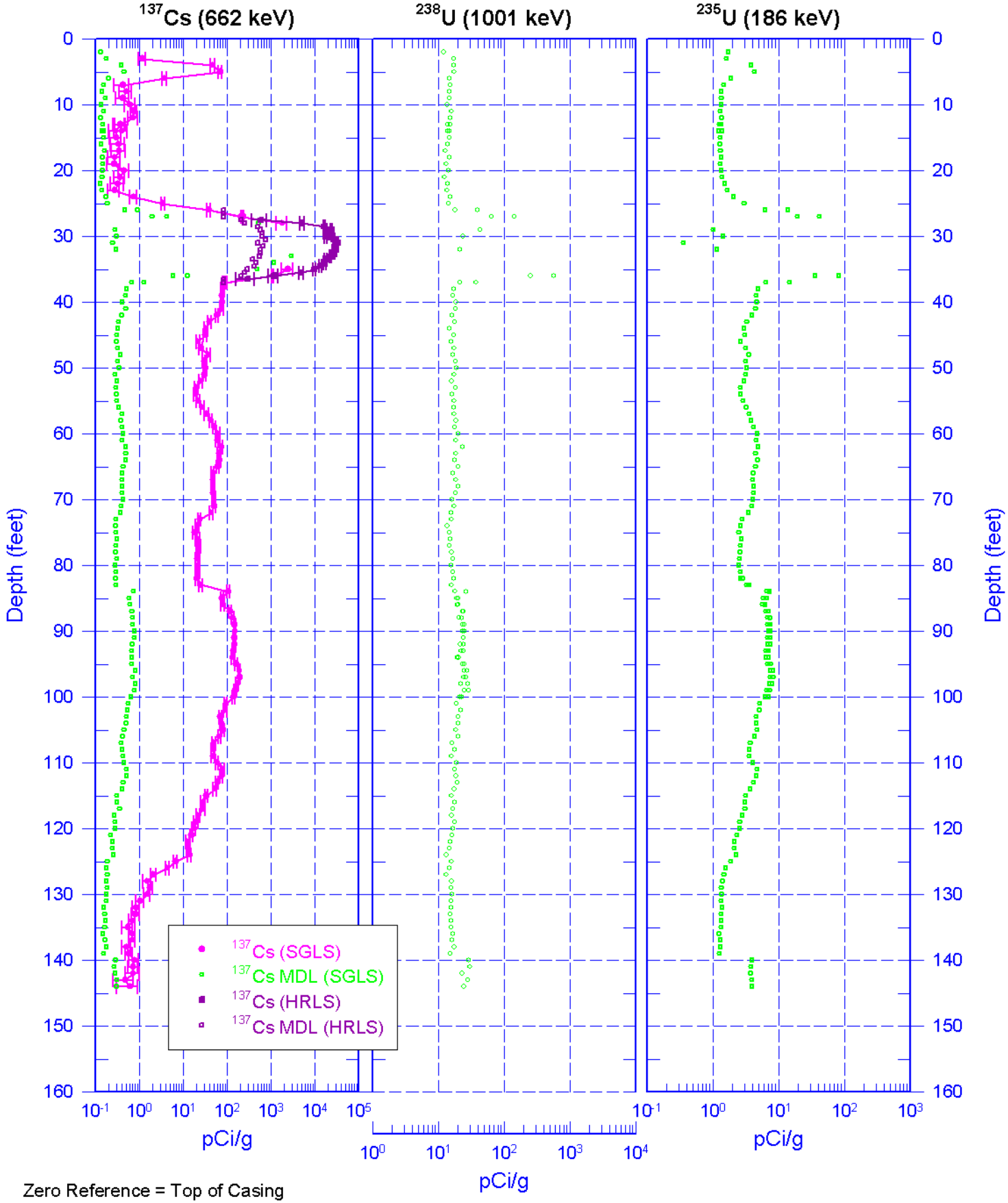
299-E33-66 (A6874) Event B
Manmade Radionuclides



Zero Reference = Top of Casing

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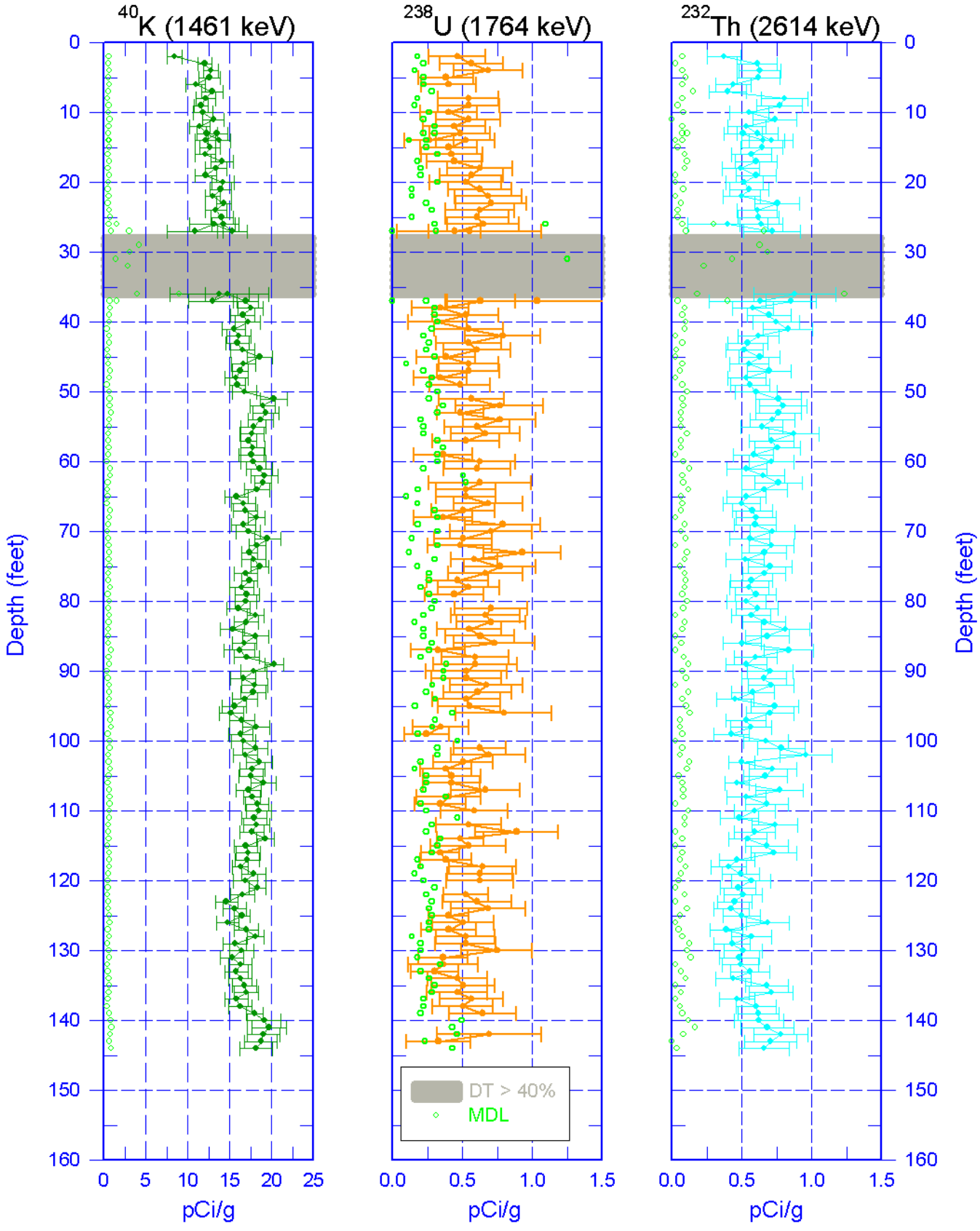
299-E33-66 (A6874)
Natural Gamma Logs



Zero Reference = Top of Casing

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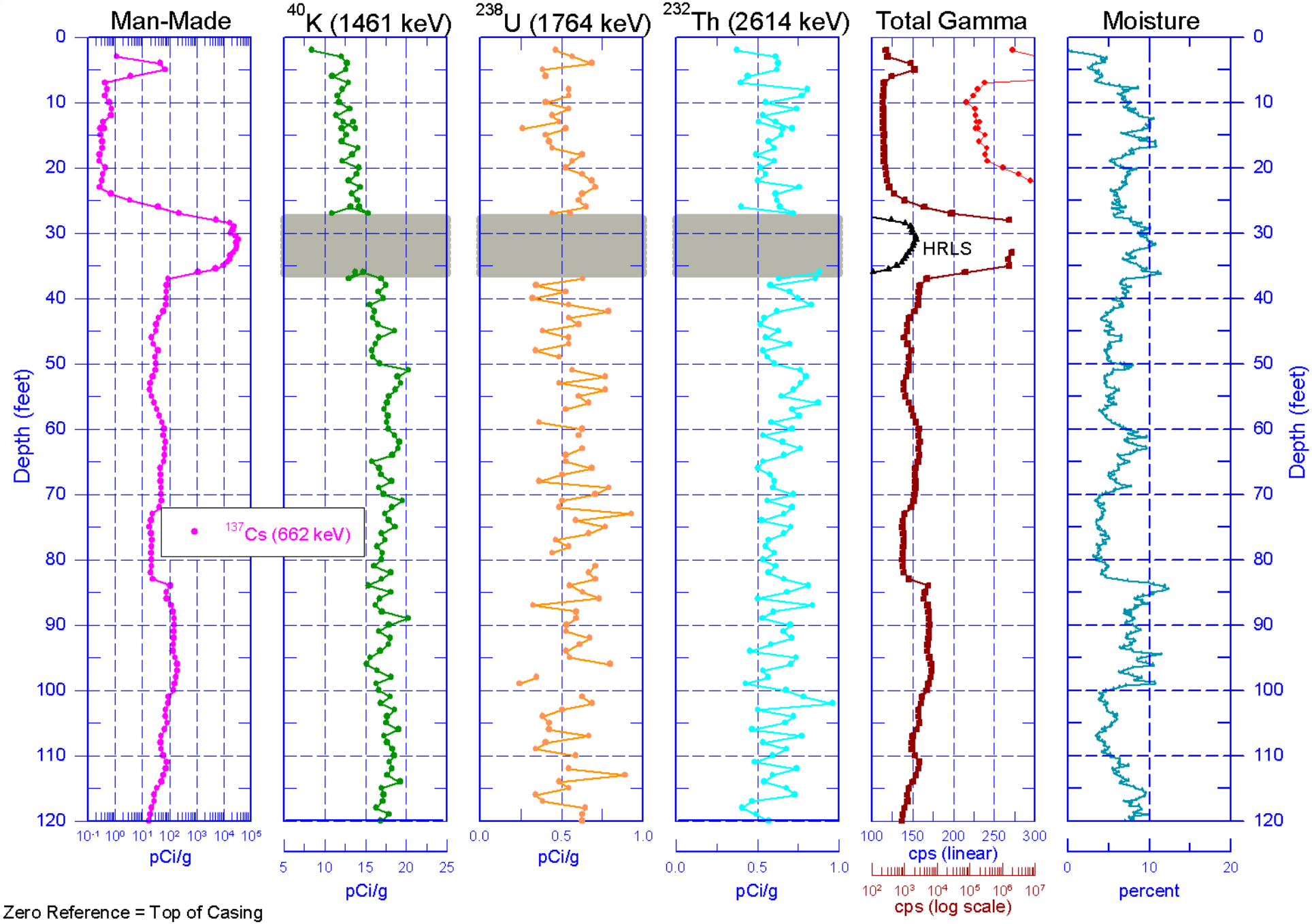
299-E33-66 (A6874) Combination Plot



Zero Reference = Top of Casing

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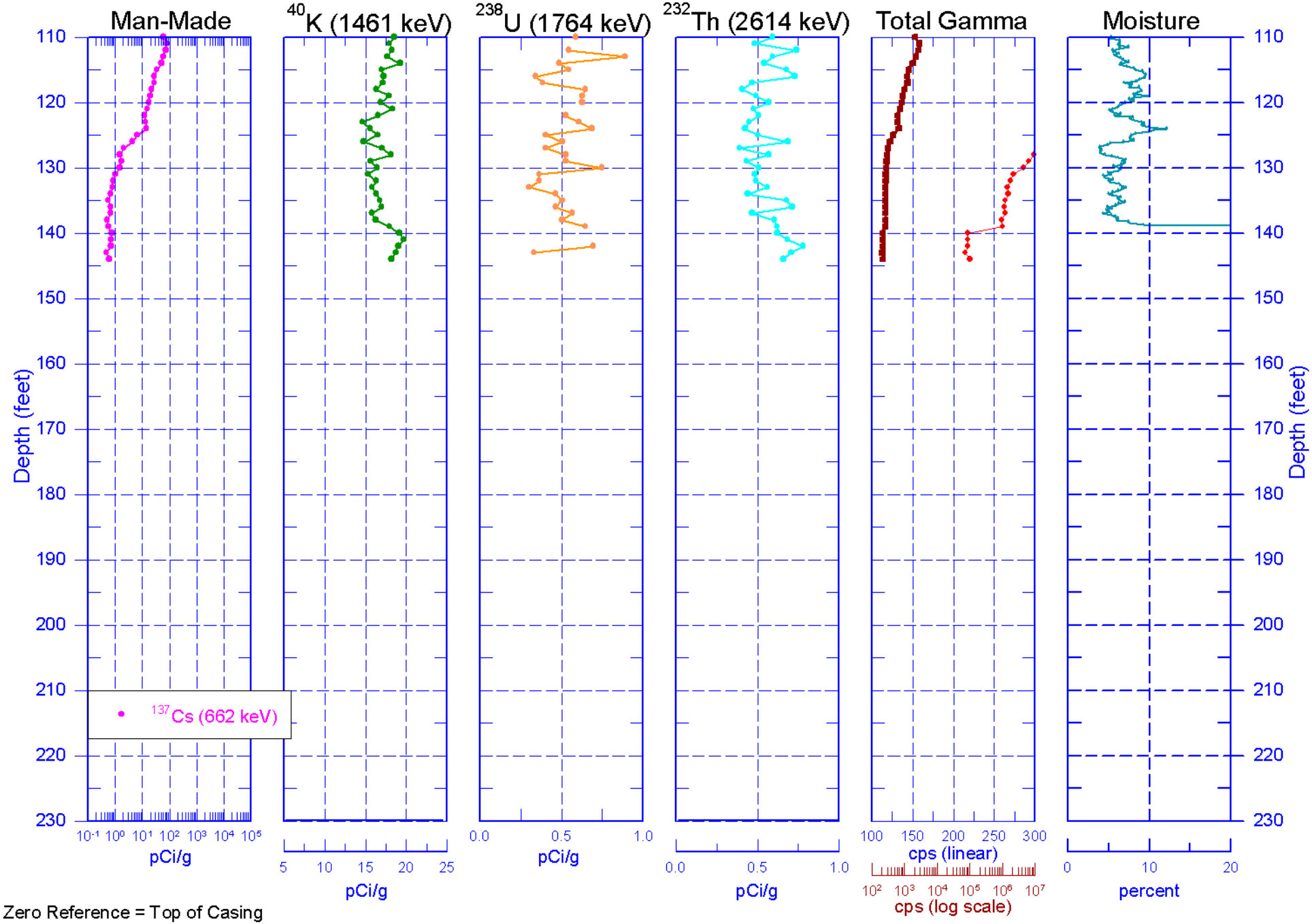
299-E33-66 (A6874) Combination Plot



Zero Reference = Top of Casing

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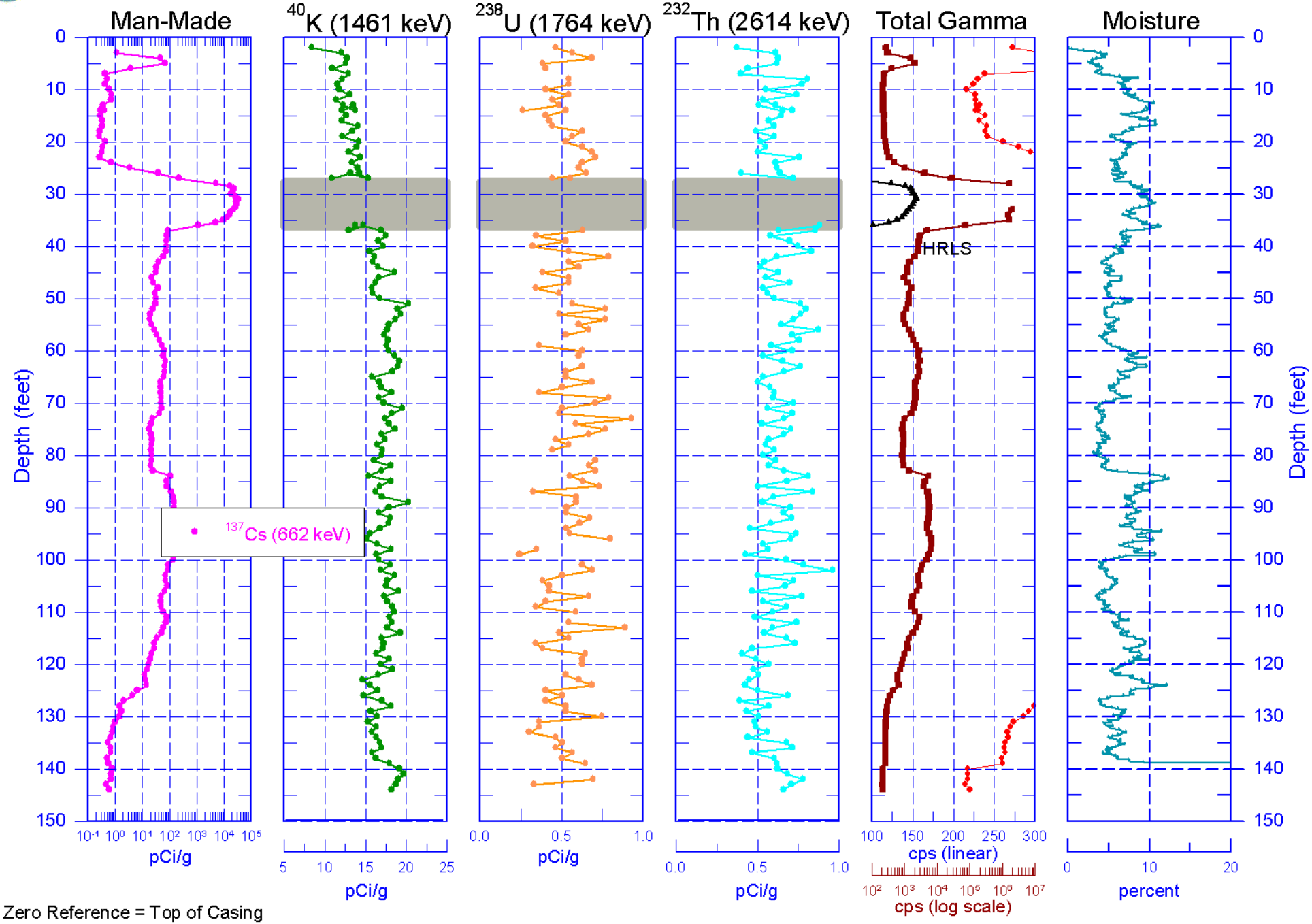
299-E33-66 (A6874) Combination Plot



Zero Reference = Top of Casing

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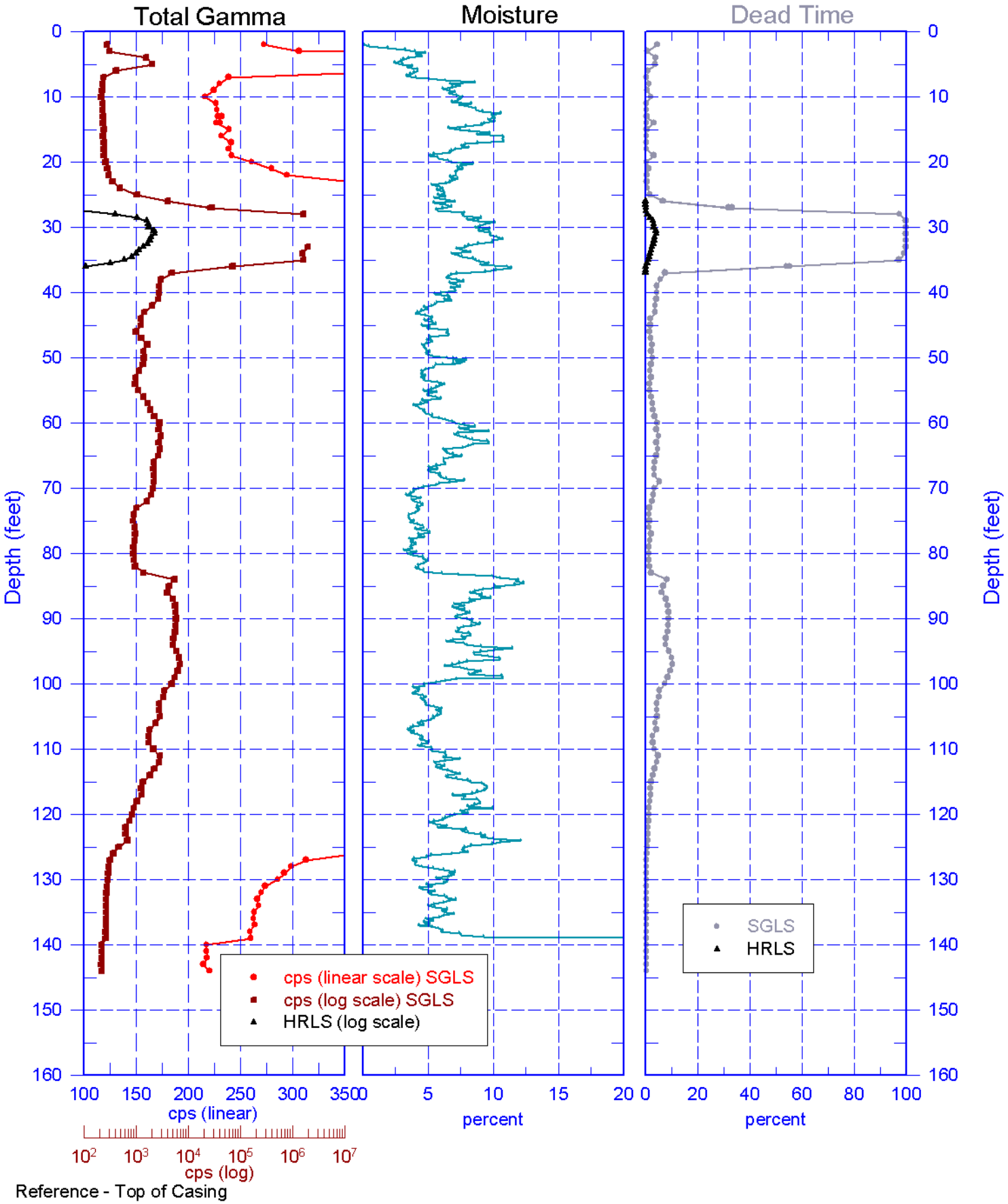
299-E33-66 (A6874)

Total Gamma, Moisture & Dead Time



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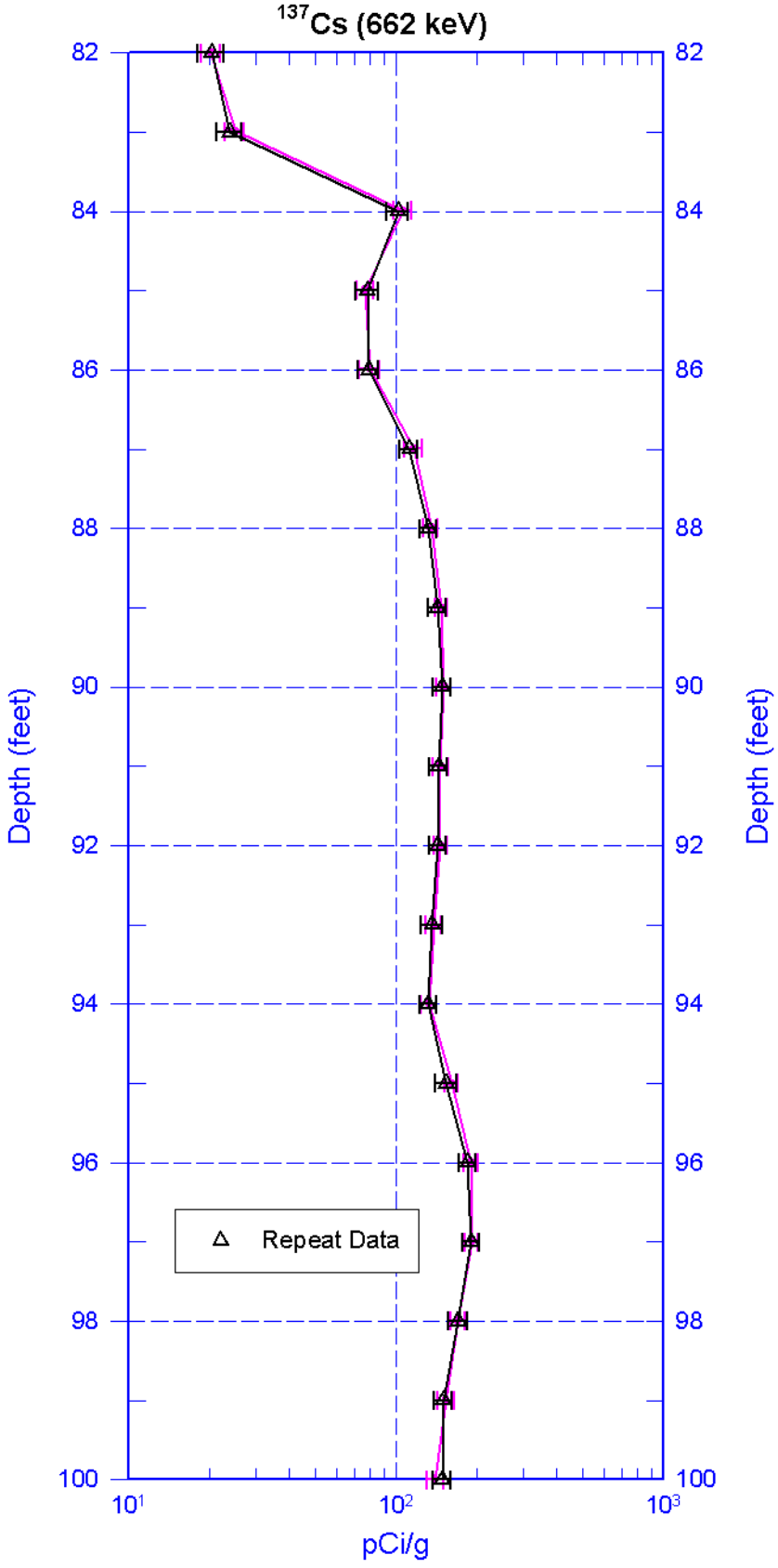
299-E33-66 (A6874) Event C
Repeat of Manmade Radionuclides



Zero Reference = Top of Casing

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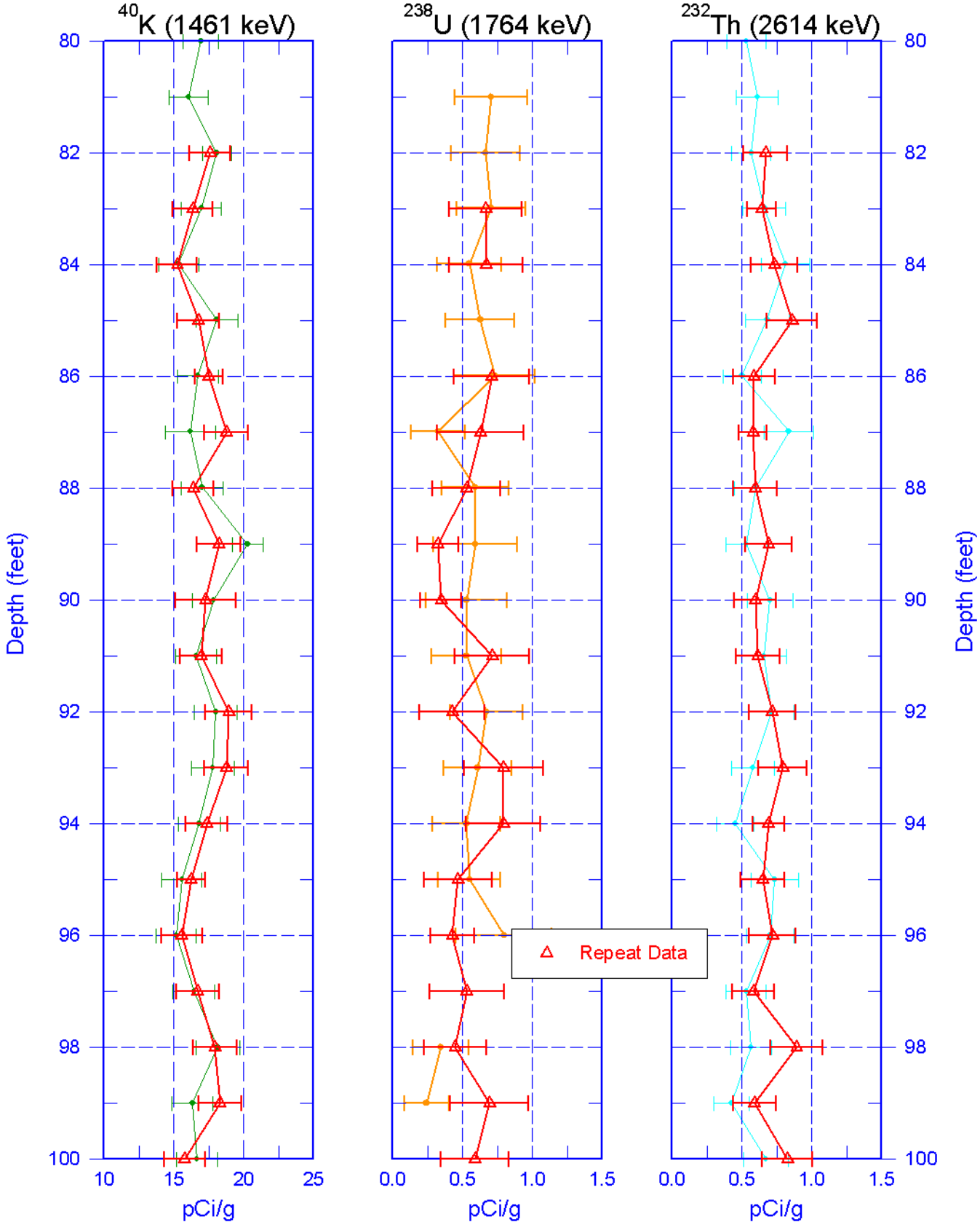
299-E33-66 (A6874)

Repeat Section of Natural Gamma Logs



Zero Reference = Top of Casing

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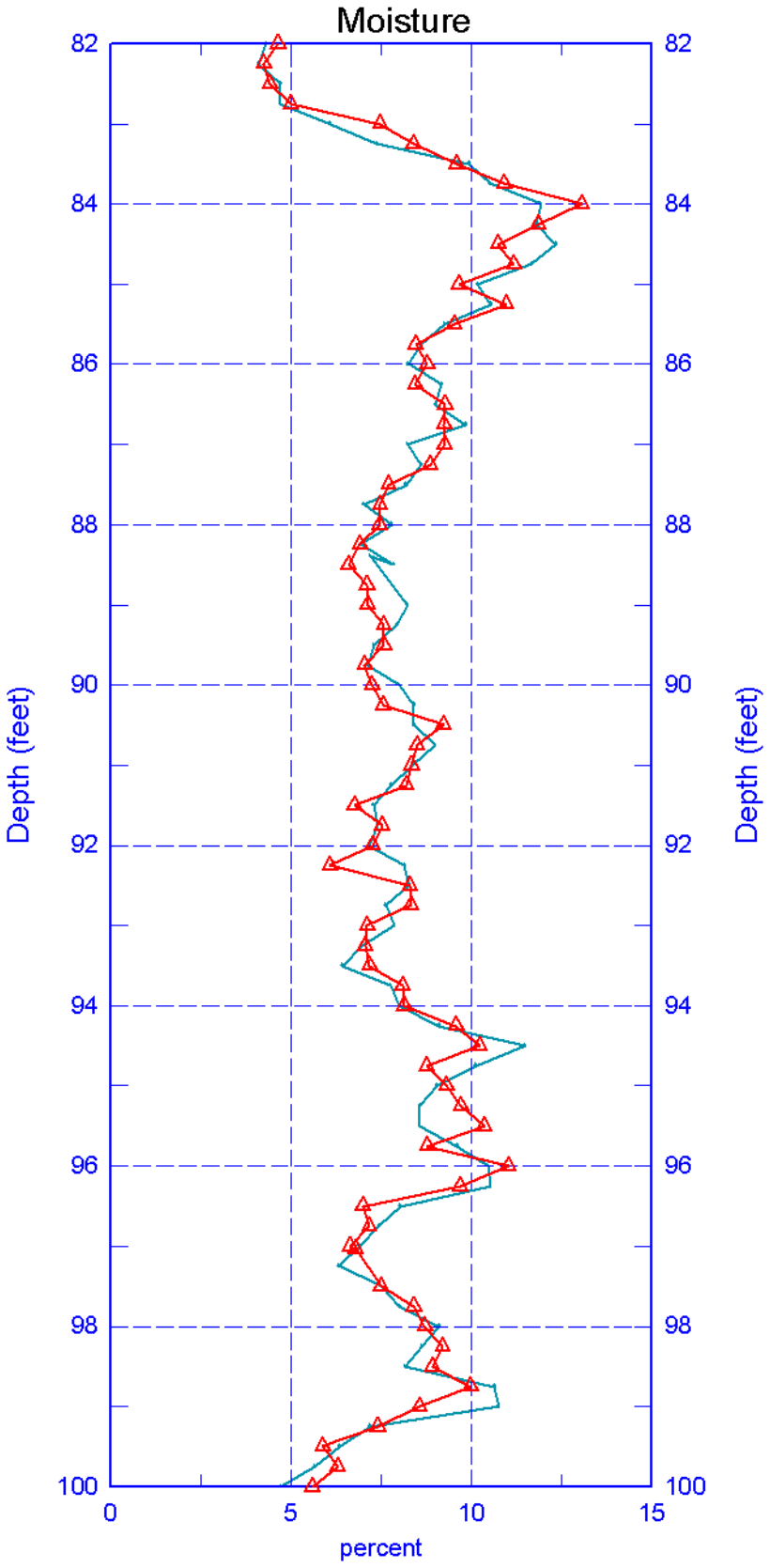
299-E33-66 (A6874)
Repeat of Moisture



Reference - Top of Casing

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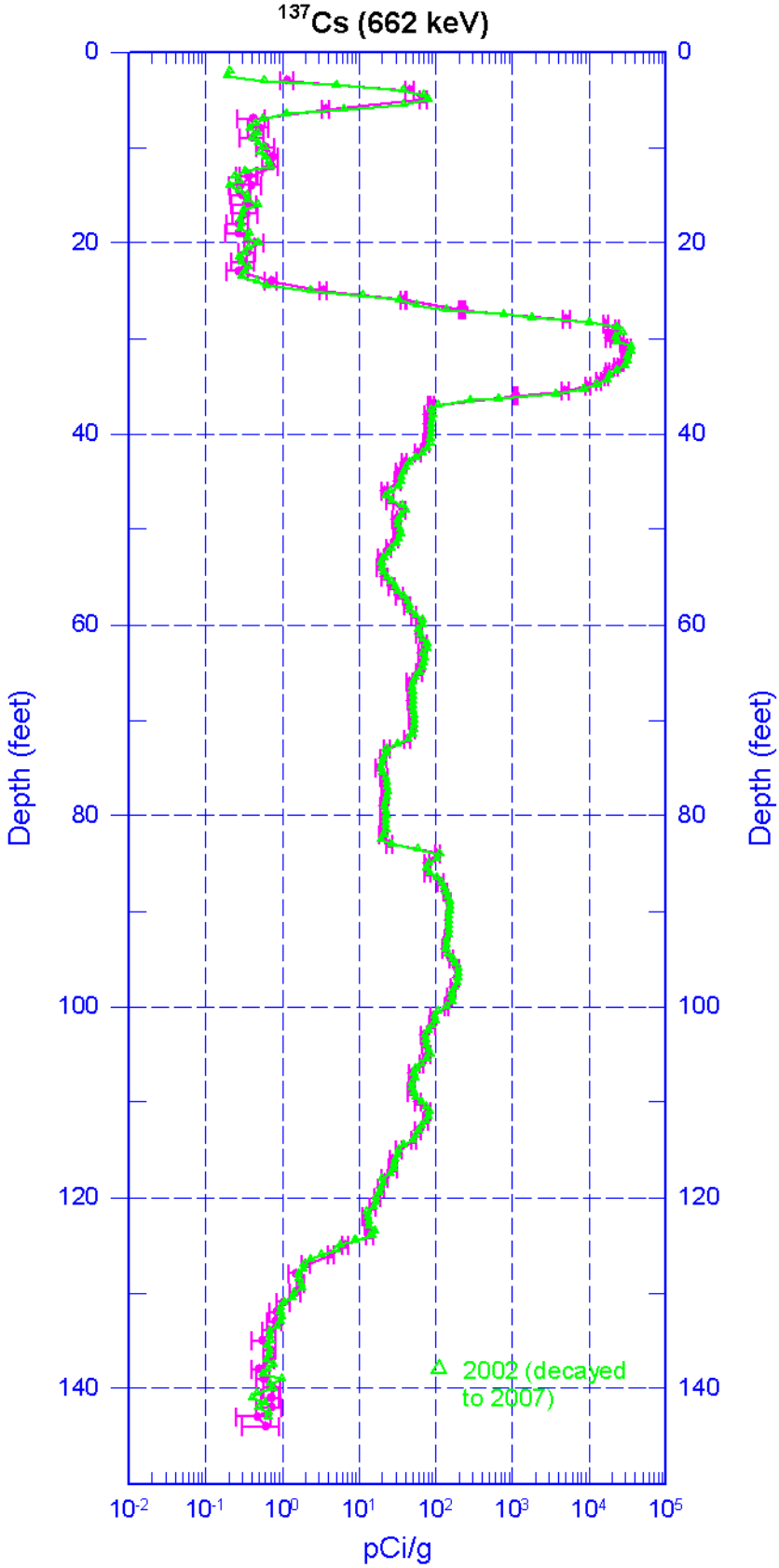
299-E33-66 (A6874)
SGLS 2002/2007 Comparison of Manmade Radionuclides



Zero Reference = Top of Casing